VERIFICATION REPORT
TISECO

VERIFICATION OF THE
"LANDFILL METHANE CAPTURE AND UTILIZATION AT MARIUPOL LANDFILLS, UKRAINE"
INITIAL AND 1ST PERIODIC

BUREAU VERITAS CERTIFICATION

REPORT NO. UKRAINE-VER/0172/2010
REVISION NO. 02

Date of first issue: 14/03/2011	Organizational unit: Bureau Veritas Certification Holding SAS
Client: TisEco	Client ref.: Tatiana Kalinichenko

Summary:

Bureau Veritas Certification has made the initial and 1st periodic verification of the "Landfill methane capture and utilization at Mariupol landfills, Ukraine", project of TisEco, located in Mariupol City, and applying the JI specific approach, on the basis of UNFCCC criteria for the JI, as well as criteria given to provide for consistent project operations, monitoring and reporting. UNFCCC criteria refer to Article 6 of the Kyoto Protocol, the JI rules and modalities and the subsequent decisions by the JI Supervisory Committee, as well as the host country criteria.

The verification scope is defined as a periodic independent review and ex post determination by the Accredited Independent Entity of the monitored reductions in GHG emissions during defined verification period, and consisted of the following three phases: i) desk review of the project design and the baseline and monitoring plan; ii) follow-up interviews with project stakeholders; iii) resolution of outstanding issues and the issuance of the final verification report and opinion. The overall verification, from Contract Review to Verification Report & Opinion, was conducted using Bureau Veritas Certification internal procedures.

This report presents the results of the initial verification aiming to get evidences of project implementation and its readiness to generate emission reductions.

The first output of the verification process is a list of Clarification, Corrective Actions Requests, Forward Actions Requests (CR, CAR and FAR), presented in Appendix A.

In summary, Bureau Veritas Certification confirms that the project is implemented as per determined changes. Installed equipment being essential for generating emission reduction runs reliably and is calibrated appropriately. The monitoring system is in place and the project is generating GHG emission reductions. The GHG emission reduction is calculated accurately and without material errors, omissions, or misstatements, and the ERUs issued totalize 13617 tons of CO2eq for the monitoring period from 15/02/2010 till 30/06/2011.

Our opinion relates to the project's GHG emissions and resulting GHG emission reductions reported and related to the approved project baseline and revised monitoring plan, and its associated documents.

Report No.: UKRAINE-ver/0172/2010	Subject Group: JI	
Project title: "Landfill methane capture and utilization at Mariupol landfills, Ukraine"		
Work carried out by: Team Leader : Kateryna Zinevych Team Member : Oleg Skoblyk		
Work reviewed by: Ivan Sokolov		
Work approved by: Flavio Gomes		
Date of this revision: 09/09/2011	Rev. No.: 02	Number of pages: 27

Bureau Veritas Certification Holding SAS

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1 INTRODUCTION

TisEco has commissioned Bureau Veritas Certification to verify the emissions reductions of its JI project ”Landfill methane capture and utilization at Mariupol landfills, Ukraine” (hereafter called “the project”) at Mariupol, Ukraine.

This report summarizes the findings of the verification of the project, performed on the basis of UNFCCC criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.

1.1 Objective

Verification is the periodic independent review and ex post determination by the Accredited Independent Entity of the monitored reductions in GHG emissions during defined verification period.

The objective of verification can be divided in Initial Verification and Periodic Verification.

Initial Verification: The objective of an initial verification is to verify that the project is implemented as planned, to confirm that the monitoring system is in place and fully functional, and to assure that the project will generate verifiable emission reductions. A separate initial verification prior to the project entering into regular operations is not a mandatory requirement.

Periodic Verification: The objective of the periodic verification is to verify that actual monitoring systems and procedures are in compliance with the monitoring systems and procedures described in the monitoring plan; furthermore the periodic verification evaluates the GHG emission reduction data and express a conclusion with a high, but not absolute, level of assurance about whether the reported GHG emission reduction data is free of material misstatements; and verifies that the reported GHG emission data is sufficiently supported by evidence, i.e. monitoring records. If no prior initial verification has been carried out, the objective of the first periodic verification also includes the objectives of the initial verification.

1.2 Scope

The verification scope is defined as an independent and objective review of the project design document, the project’s baseline study and monitoring plan and other relevant documents. The information in these documents is reviewed against Kyoto Protocol requirements, UNFCCC rules and associated interpretations.

The objective of verification can be divided in Initial Verification and Periodic Verification.
Initial Verification: The objective of an initial verification is to verify that the project is implemented as planned, to confirm that the monitoring system is in place and fully functional, and to assure that the project will generate verifiable emission reductions. A separate initial verification prior to the project entering into regular operations is not a mandatory requirement.
Periodic Verification: The objective of the periodic verification is to verify that actual monitoring systems and procedures are in compliance with the monitoring systems and procedures described in the monitoring plan; furthermore the periodic verification evaluates the GHG emission reduction data and express a conclusion with a high, but not absolute, level of assurance about whether the reported GHG emission reduction data is free of material misstatements; and verifies that the reported GHG emission data is sufficiently supported by evidence, i.e. monitoring records. If no prior initial verification has been carried out, the objective of the first periodic verification also includes the objectives of the initial verification.

The verification is not meant to provide any consulting towards the Client. However, stated requests for clarifications and/or corrective actions may provide input for improvement of the project monitoring towards reductions in the GHG emissions.

1.3 Verification Team

The verification team consists of the following personnel:

Kateryna Zinevych
Bureau Veritas Certification Team Leader, Climate Change Lead Verifier

Oleg Skoblyk
Bureau Veritas Certification Team Member, Climate Change Lead Verifier

This verification report was reviewed by:

Ivan Sokolov
Bureau Veritas Certification, Internal Technical Reviewer

2 METHODOLOGY

The overall verification, from Contract Review to Verification Report & Opinion, was conducted using Bureau Veritas Certification internal procedures.

In order to ensure transparency, a verification protocol was customized for the project, according to the version 01.1 of the Joint Implementation Determination and Verification Manual, issued by the Joint Implementation Supervisory Committee at its 19 meeting on 04/12/2009. The protocol shows, in a transparent manner, criteria (requirements), means of verification and the results from verifying the identified criteria. The verification protocol serves the following purposes:

- It organizes, details and clarifies the requirements a JI project is expected to meet;
- It ensures a transparent verification process where the verifier will document how a particular requirement has been verified and the result of the verification.

The completed verification protocol is enclosed in Appendix A of this report.

2.1 Review of Documents

The Monitoring Report (MR) Monitoring report ”Landfill methane capture and utilization at Mariupol landfills, Ukraine” version 01 dated 31/12/2010 submitted by TisEco and additional background documents related to the project design and baseline, i.e. country Law,) and/or Guidance on criteria for baseline setting and monitoring, Host party criteria, Kyoto Protocol, Clarifications on Verification Requirements to be Checked by an Accredited Independent Entity were reviewed.

To address Bureau Veritas Certification corrective action and clarification requests, prior to and following the site-visit PPs revised the MR and resubmitted them as version 02 dated 01/03/2011.

To address Bureau Veritas Certification corrective action and clarification requests, prior to and following the site-visit PPs revised the MR and resubmitted them as version 03 dated 25/08/2011, the latter MR version 03 is considered final.

The verification findings presented in this report relate to the Monitoring Reports versions 01, 02, 03 and project as described in the determined PDD.

QA/QC documentation was reviewed onsite.

2.2 Follow-up Interviews

On 31/11/2010 Bureau Veritas Certification performed (on-site) interviews with project stakeholders to confirm selected information and to resolve issues identified in the document review. Representatives of TisEco and

SEC “Biomass-Carbon” were interviewed (see References). The main topics of the interviews are summarized in Table 1.

Table 1 Interview topics

Interviewed organization	Interview topics
TisEco	Organizational structure. Responsibilities and authorities. Training of personnel. Quality management procedures and technology. Implementation of equipment (records). Metering equipment control. Metering record keeping system, database.
Consultant: SEC “Biomass-Carbon”	Baseline methodology. Monitoring report.

2.3 Resolution of Clarification, Corrective and Forward Action Requests

The objective of this phase of the verification is to raise the requests for corrective actions and clarification and any other outstanding issues that needed to be clarified for Bureau Veritas Certification positive conclusion on the GHG emission reduction calculation.

If the Verification Team, in assessing the monitoring report and supporting documents, identifies issues that need to be corrected, clarified or improved with regard to the monitoring requirements, it should raise these issues and inform the project participants of these issues in the form of:

(a) Corrective action request (CAR), requesting the project participants to correct a mistake that is not in accordance with the monitoring plan;

(b) Clarification request (CL), requesting the project participants to provide additional information for the AIE to assess compliance with the monitoring plan;

(c) Forward action request (FAR), informing the project participants of an issue, relating to the monitoring that needs to be reviewed during the next verification period.

To guarantee the transparency of the verification process, the concerns raised are documented in more detail in the verification protocol in Appendix A.

3 VERIFICATION CONCLUSIONS

In the following sections, the conclusions of the verification are stated.

The findings from the desk review of the original monitoring documents and the findings from interviews during the follow up visit are described in the Verification Protocol in Appendix A.

The Clarification, Corrective and Forward Action Requests are stated, where applicable, in the following sections and are further documented in the Verification Protocol in Appendix A. The verification of the Project resulted in 4 Corrective Action Requests, 3 Clarification requests and 0 Forward action requests.

The number between brackets at the end of each section corresponds to the DVM paragraph.

3.1 Remaining issues and FARs from previous verifications

Written project approval by the Ukraine #1219/23/7 dated 18/08/2010 has been issued by the State Environmental Investment Agency of Ukraine (DFP of Ukraine) (It is listed among Category 1 Documents in the Reference section of this report).

Written project approval by the foreign country (Japan) #1 dated 08/08/2011 has been issued by the Ministry of Economy, Trade and Industry of Japan (DFP of Japan). (It is listed among Category 1 Documents in the Reference section of this report).

The abovementioned written approvals are unconditional.

3.2 Project approval by Parties involved (90-91)

Written project approval by the Ukraine has been issued by the National Environmental Investment Agency of Ukraine.(It is listed among Category 1 Documents in the Reference section of this report)

Written project approval by the Japan has been issued by the Ministry of Economy, Trade and Industry of Japan.(It is listed among Category 1 Documents in the Reference section of this report)

The abovementioned written approval is unconditional.

3.3 Project implementation (92-93)

The Project implementation schedule is divided into the following parts:

- **Prymorsky landfill**. Installation of gas extraction system, pipelines, flare and CHP unit in Prymorsky landfill from September 2009 to September 2011;
- **Ordzhonikidze landfill**. Installation of gas extraction system, pipelines, flare and CHP unit in Ordzhonikidze landfill in 2012.

Table 2. *Status of implementation*

Activity	Date of start-up according to the PDD	Date of start-up actual
Prymorsky landfill		
Extraction wells installation	December 2009	December 2009
Pipelines installation	December 2009	January 2010
Flare installation and start-up	January 2010	February 2010
CHP engine installation and start-up	September 2010	2011
Ordzhonikidze landfill		
Extraction wells installation	December 2010	2012
Pipelines installation	December 2010	2012
Flare installation and start-up	January 2011	2012

Outstanding issues related to the Project implementation, PP's response and BV Certification's conclusion is described in Appendix A.

3.4 Compliance of the monitoring plan with the monitoring methodology (94-98)

The monitoring occurred in accordance with the monitoring plan included in the PDD regarding which the determination has been deemed final and is so listed on the UNFCCC JI website.

For calculating the emission reductions or enhancements of net removals, key factors, such as

- Net amount of electricity generated using LFG
- Total amount of thermal energy generated using LFG
- Carbon emission factor of electricity
- CO_2 emission factor for fossil fuel
- Net calorific value of fossil fuel
- Efficiency of the baseline captive power plant
- Efficiency of the baseline boiler/air heater for producing thermal energy
- Project emissions from electricity consumption by the project activity
- Operation of the energy plant
- Operation of the boiler/air heater/heat generating equipment
- Amount of methane generated

Influencing the baseline emissions or net removals and the activity level of the project and the emissions or removals as well as risks associated with the project were taken into account, as appropriate.

Data sources used for calculating emission reductions or enhancements of net removals, such as

- On-line LFG flow meter
- On-line gas analyser
- Temperature probe
- Pressure gauge
- Electricity meter
- Heat meter
- IPCC Guidelines
- Test data

are clearly identified, reliable and transparent.

Emission factors, including default emission factors, are selected by carefully balancing accuracy and reasonableness, and appropriately justified of the choice.

The calculation of emission reductions or enhancements of net removals is based on conservative assumptions and the most plausible scenarios in transparent manner.

Outstanding issues related to the Compliance of the monitoring plan with the monitoring methodology, PP's response and BV Certification's conclusion is described in Appendix A.

3.5 Revision of monitoring plan (99-100)

Not applicable.

3.6 Data management (101)

All continuously measured parameters (LFG concentrations, pressure and temperature, Flare temperature and electricity), are recorded electronically by Memograph M RSG40 and stored into on-site project operator computer. The data also can be downloaded on the both computers at SEC Biomass headquarter controlled by Monitoring Manager and TIS Eco headquarter. This is made due to internet connection and/or e-mail. The data files at both SEC Biomass and TIS Eco computers are entered into database and achieved there for whole monitoring period.

Outstanding issues related to the Data management, PP's response and BV Certification's conclusion is described in Appendix.

3.7 Verification regarding programmes of activities (102-110)

Not applicable.

4 VERIFICATION OPINION

Bureau Veritas Certification has performed the initial and 1st periodic verification of the "Landfill methane capture and utilization at Mariupol landfills, Ukraine" Project in Ukraine which applies the JI specific approach. The verification was performed on the basis of UNFCCC criteria and host country criteria and also on the criteria given to provide for consistent project operations, monitoring and reporting.

The verification consisted of the following three phases: i) desk review of the project design and the baseline and monitoring plan; ii) follow-up interviews with project stakeholders; iii) resolution of outstanding issues and the issuance of the final verification report and opinion.

The management of TisEco is responsible for the preparation of the GHG emissions data and the reported GHG emissions reductions of the project on the basis set out within the project Monitoring and Verification Plan indicated in the final PDD version 1.2. The development and maintenance of records and reporting procedures in accordance with that plan, including the calculation and determination of GHG emission reductions from the project, is the responsibility of the management of the project.

Bureau Veritas Certification verified the Project Monitoring Report version 03 dated 25/08/2011 for the reporting period as indicated below. Bureau Veritas Certification confirms that the project is implemented as as planned and described in approved project design documents. Installed equipment being essential for generating emission reduction runs reliably and is calibrated appropriately. The monitoring system is in place and the project is generating GHG emission reductions.

Bureau Veritas Certification can confirm that the GHG emission reduction is accurately calculated and is free of material errors, omissions, or misstatements. Our opinion relates to the project's GHG emissions and resulting GHG emissions reductions reported and related to the approved project baseline and monitoring, and its associated documents. Based on the information we have seen and evaluated, we confirm, with a reasonable level of assurance, we confirm the following statement:

Reporting period: From 15/02/2010 till 30/06/2011

Baseline emissions	:13655	t CO2 equivalents.
Project emissions	: 38	t CO2 equivalents.
Emission Reductions	:13617	t CO2 equivalents.

5 REFERENCES

Category 1 Documents:
Documents provided by TisEco that relates directly to the GHG components of the project.

/1/ Project Design Document, version 1.2 dated 18/01/2010

/2/ Determination report, № Ukraine/0053/2009, dated 18/01/2010.

/3/ Monitoring Report dated 31/12/2010 version 01

/4/ Monitoring Report dated 01/03/2011 version 02

/5/ Monitoring Report dated 25/08/2011 version 03

/6/ Approved consolidated methodology ACM0001, version 11, "Consolidated baseline and monitoring methodology for landfill gas project activities"

/7/ A Letter of Approval #1219/23/7 dated 18/08/2010 issued by National Environmental Investment Agency of Ukraine

/8/ A Letter of Approval #1 dated 08/08/2011 issued by Ministry of Economy, Trade and Industry of Japan

Category 2 Documents:
Background documents related to the design and/or methodologies employed in the design or other reference documents.

1. Flowmeter № 04632
2. Current transformer
3. Gas analysis
4. Biogas projects management in Ukraine
5. Operator's work place
6. Control system of flares
7. Operational journal
8. Journal of execution of gas analizer calibration NUK NGA 5- CH4-02
9. Pattern approval certificate of measuring instruments, Gas vortex meters GVM, RU.C.29.006.A., # 28383, Valid till 01/07/2012
10. Permit № PPC 00-30803 on usage. Vortex gas meters VGM in explosive prevention execution.
11. Certificate of measuring means approval
12. Certificate of conformity
13. Certificate on acceptance. Current transformer T 0-66, # 32311. Accuracy class 0,5
14. Certificate on acceptance. Current transformer T 0-66, # 28612. Accuracy class 0,5

15. Certificate of measuring means approval
16. Certificate of conformity
17. Certificate on acceptance. Current transformer T 0-66, # 30779. Accuracy class 0,5
18. Operating instructions. Stationary gas analysing system for landfill gas.
19. Factory calibration certificate. Memograph M. Serial number C9009804267
20. Protocol # 235 of air research of localities from 27.08.10, LLC ''Tys Eco''
21. Working project. ''Construction of collection system and biogas utilization at Sea landfill of SHW'' Evaluation of environmental impacts. Volume 4
22. Statement of stopping and putting seals and means to preserve records. # 429196 from 11.06.2010
23. Statement of technical reviews of accounting records up to 1 kV, № 461301. From 11/06/2010
24. Statement of operational readiness of object, Mariupol, 27.10.10.'Construction of collection system and biogas utilization at Sea landfill of solid household wastes
25. Results of air research in May and July 2010. Protocol # 145 from 28.05.10, Protocol # 194 from 21.07.10
26. Protocol # 145 of air research of localities from 28.05.10.
27. Protocol # 194 of air research of localities from 28.05.10.
28. Expert conclusion # 142 from 22.01.10
29. Conclusion of State Sanitary-epidemiological service # 15 from 11.02.10
30. Protocol № 15/03.2 of State Sanitary-epidemiological examination from 11.02.2010
31. Expert conclusion # № 10 В 07 0025 00.00 0028 П from 22.01.10 on conformity to normative acts on energy saving of project.
32. Conclusion of State Ecological Service № 03/05-1930/09 from 16.11.09
33. Examination conclusion № 14.-01.-22.-0695.10 concerning conformity of project documentation to normative acts on labour safety
34. Letter of approval of joint implementation project ''Collection and utilization of methan from landfills of solid household wastes, Mariupol, Ukraine'' № 1219/23/7 from 18/08/2010

35. Service agreement # 11 from 25.03.10
36. Estimates on laboratory researches carrying out of objects of air

37. Invoice on active energy № 11/3806 for october 2010

38. Statement of acceptance and transfer of consumed energy for october 2010

39. Invoice on active energy № 11/3806 for september 2010
40. Statement of acceptance and transfer of consumed energy for september 2010

41. Invoice on active energy № 11/3806 for august 2010
42. Statement of acceptance and transfer of consumed energy for august 2010
43. Invoice on active energy № 11/3806 for july 2010
44. Statement of acceptance and transfer of consumed energy for july 2010

45. Invoice on active energy № 11/3806 for juny 2010
46. Statement of acceptance and transfer of consumed energy for juny 2010

47. Invoice on active energy № 11/3806 for may 2010
48. Statement of acceptance and transfer of consumed energy for may 2010

49. Invoice on active energy № 11/3806 for april 2010
50. Statement of acceptance and transfer of consumed energy for april 2010

51. Invoice on active energy № 11/3806 for march 2010
52. Statement of acceptance and transfer of consumed energy for march 2010

53. Invoice on active energy № 11/3806 for february 2010
54. Statement of acceptance and transfer of consumed energy for february 2010
55. Invoice on active energy № 11/3806 for january 2010

56. Statement of consumed energy amount for january 2010
57. Service agreement on measuring units verification № 10/10-11, from 03 september 2010
58. Estimated cost of the works. Annex to the Contract of 03.09.10 № 10/10-11
59. Additional agreement # 1 from 06/09/10 to Contract of 03.09.10 № 10/10-11
60. Spesification to Contract of 03.09.10 № 10/10-11
61. Protocol of pressure sensor verification from 07.09.2010, Type МИДА-ДИ-13П-01 Ex, № 08319027
62. Passport on pressure sensor Type МИДА-ДИ-13П-01 Ex, № 08319027

63. Certificate on working measuring unit verification # 1183. Valid till 08.09.2011. Thermoelectrical converter
64. Certificate on working measuring unit verification # 1182. Valid till 08.09.2011. Thermoelectrical converter

65. Certificate on working measuring unit verification # 1184. Valid till 08.09.2011. Thermoelectrical converter
66. Certificate on state metrological attestation # 676 from 25.10.2010. Gas analizer
67. Certificate on state metrological attestation # 39.049.10 from 28.01.2010. Flowmeter sensor FS M.-1600, № 04632

68. Results of state metrological attestation
69. Operational manual 311.03.00.000 PE. Unit of expenditures calculation microprocessing UEC. M.
70. Statement # № 5/37432 from 25.09.2010 on delivery-acceptance executed work (service)

71. Letter # 713 from 18.11.10. Private scientific and production enterprise ''Synaps''
72. Passport 311.01.00.000 ПС, Gasmeter sensor GS, M 1600 № 04632
73. Protocol of pressure sensor verification from 07.09.2010, Type МИДА-ДИ-13П-01 Ex, № 08319027
74. Passport on pressure sensor Type МИДА-ДИ-13П-01 Ex, № 08319027
75. Passport on cogeneration installation CGI-200
76. Certificate of conformity UA 1.003.0065423-09. Term of validity from 23.09.09 till 22.09.20 on electrical aggregates of models АГП-50-Т400-1Р and АГП-100-Т400-1Р
77. Book 6, Volume 3. Energy unit on the base of gas piston cogeneration modules fro power generation by the way of gas untilization of landfill of solid household wastes, Mariupol, Complex automation. Working project
78. Functional scheme of automation. Energy unit on the base of gas piston modules.
79. General journal of object building. From 31.01.09 till 15.12.09
80. Executed construction of gas suction well # 1
81. Executed construction of gas suction well # 2
82. Executed construction of gas suction well # 15
83. Executed construction of gas suction well # 36
84. Passport # 553-09 on tubes from polyethilene for hot water supply, intended for buildinf and repair of gas supply networks under ГОСТ Б.В. 2.7-73-98

85. Certificate of quality # 396 on bentonite mud powder modified ТУ У 320.00136751.032-99
86. Passport # 10-09 on gravity tubes, produced from polyethilene for sewage external networks, produced under ГОСТ Б.В 2.5-32:2007
87. Document on quality # 4043 Portlandcement ПЦ П/Б-III 400, Part № 382
88. Passport of radiation quality of raw and building materials. Valid during 1 year. Date of issue 08.05.09

89. Project of work execution on device of gas suction and drainage wells at the site
90. Statement # 1 of working commission from 30.11.09
91. Declaration statement of hidden works. Concreting of top part of well # 2
92. Declaration statement of hidden works. Concreting of top part of well # 19
93. Declaration statement of hidden works. Concreting of top part of well # 20
94. Declaration statement of hidden works. Installation of gas suction tube in well # 12
95. Declaration statement of hidden works. Installation of gas suction tube in well # 24
96. Declaration statement of hidden works. Installation of gas suction tube in well # 11
97. Declaration statement of hidden works. Drilling of gas suction well # 41
98. Declaration statement of hidden works. Drilling of gas suction well # 9
99. Declaration statement of hidden works. Drilling of gas suction well # 7
100. Declaration statement of hidden works. Drilling of gas suction well # 15
101. Declaration statement of hidden works. Drilling of gas suction well # 10
102. Declaration statement of hidden works.Setting up of clay lock in well # 41
103. Declaration statement of hidden works.Setting up of clay lock in well # 1
104. Declaration statement of hidden works.Setting up of clay lock in well # 7
105. Declaration statement of hidden works.Setting up of clay lock in well # 15
106. Declaration statement of hidden works.Stacking of crushed stone in well # 41
107. Declaration statement of hidden works.Stacking of crushed stone in well # 6

108. Declaration statement of hidden works.Stacking of crushed stone in well # 30
109. Declaration statement of hidden works.Stacking of crushed stone in well # 15
110. Declaration statement of hidden works. Concreting of top part of well # 13
111. Declaration statement of hidden works. Concreting of top part of well # 43
112. Declaration statement of hidden works.Setting up of clay lock in well # 13
113. Declaration statement of hidden works.Setting up of clay lock in well # 43
114. Declaration statement of hidden works.Stacking of crushed stone in well # 13
115. Declaration statement of hidden works.Stacking of crushed stone in well # 43
116. Declaration statement of hidden works. Installation of gas suction tube in well # 13
117. Declaration statement of hidden works. Installation of gas suction tube in well # 17

118. Declaration statement of hidden works. Drilling of gas suction well # 13

119. Declaration statement of hidden works. Drilling of gas suction well # 42

120. Declaration statement of hidden works. Drilling of drainage wells # 1,2,3
121. Declaration statement of hidden works. Installation of drainage tube in wells # 4,5,6

122. Statement # 6 of working commission from 06.12.09
123. Approved consolidated methodology ACM0001, version 11, “Consolidated baseline and monitoring methodology for landfill gas project activities”

Persons interviewed:
List persons interviewed during the verification or persons that contributed with other information that are not included in the documents listed above.

/1./ Kutsyi Denis, SEC "Biomass-Carbon”, Monitoring Manager;
/2./ Pashchenko Ivan Mihaloivich, LLC Tis Eco, senior project manager;
/3./ Maiboroda Nikolai Nikolayevich, LLC Tis Eco, Chief Project Engineer;
/4./ Zamikula Valeriy Borisovich, LLC Tis Eco ", the local project

manager;
/5./ Tronev Vladimir Nikolayevich, LLC Tees Eco Project perator;
/6./ Moskalenko Artoo Yevgenovych, LLC Tis Eco mechanic;
/7./ Tronev Artem Vladimirovich, LLC Tis Eco mechanic;
/8./ Nezhvitskiy Yuriy Aleksandrovich, STO JC CC “Donetsk-Lada”, Director;
/9./ Chigarev Evgeniy Arkadievich, PUC “Polygon TPV”, Director.

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APPENDIX A: VERIFICATION PROTOCOL

BUREAU VERITAS CERTIFICATION HOLDING SAS

VERIFICATION PROTOCOL

Check list for verification, according to the JOINT IMPLEMENTATION DETERMINATION AND VERIFICATION MANUAL (Version 01)

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
Project approvals by Parties involved				
90	Has the DFPs of at least one Party involved, other than the host Party, issued a written project approval when submitting the first verification report to the secretariat for publication in accordance with paragraph 38 of the JI guidelines, at the latest?	A Letter of Approval for Joint Implementation Project "Landfill methane capture and utilization at Mariupol landfills, Ukraine" No.1219/23/7 dated 18/08/2010 issued by National Environmental Investment Agency of Ukraine. CAR1: Letter of Approval from sponsor Party not provided. Please provide Letter of Approval issued by sponsor Party and include relevant information to MR.	CAR1	OK
91	Are all the written project approvals by Parties involved unconditional?	Yes, all the written project approvals by Parties involved are unconditional.	OK	OK
Project implementation				
92	Has the project been implemented in accordance with the PDD regarding which the determination has been deemed final and is so listed on the UNFCCC JI website?	CL1: Amounts of emission reductions provided in PDD and MR are different. Pleas clarify.	CL1	OK
93	What is the status of operation of the project during the monitoring period?	The flaring testing, trials and start of operation in Prymorsky landfill under registered PDD was scheduled in January 2010. After a testing and trial period of LFG capture system operation and a feasibility analysis, the CHP in Prymorsky landfill will be installed and commission.	OK	OK

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
		The emission reductions started in February 2010. Now the Project formally is in the Flaring testing and trials period.		
Compliance with monitoring plan				
94	Did the monitoring occur in accordance with the monitoring plan included in the PDD regarding which the determination has been deemed final and is so listed on the UNFCCC JI website?	CL2: There is no information about monitoring $LFG_{total,y}$ in Monitoring Report. Please clarify in MR.	CL2	OK
95 (a)	For calculating the emission reductions or enhancements of net removals, were key factors, influencing the baseline emissions or net removals and the activity level of the project and the emissions or removals as well as risks associated with the project taken into account, as appropriate?	CL3: In MR and supporting documents no any mentions about $TM_{RG,h}$ monitoring. In accordance with "Tool to determine project emissions from flaring gases containing Methane" this parameter monitored. Please clarify.	CL3	OK
95 (b)	Are data sources used for calculating emission reductions or enhancements of net removals clearly identified, reliable and transparent?	See CL2 and CL3 above.	-	-
95 (c)	Are emission factors, including default emission factors, if used for calculating the emission reductions or enhancements of net removals, selected by carefully balancing accuracy and reasonableness, and appropriately justified of the choice?	Yes, emission factors selected by carefully balancing accuracy and reasonableness, and appropriately justified of the choice.	OK	OK
95 (d)	Is the calculation of emission reductions or enhancements of net removals based on conservative assumptions and the most plausible scenarios in a transparent manner?	CAR2: Provided calculations doesn't take into account emissions CO2 from methane combustion. This emission must be including to project emissions. CAR3: Please provide calculations and formulas of emission reductions in MR in line with calculations provided in final version PDD.	CAR2 CAR3	OK OK

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
		CAR4: Flare efficiency 90% used in calculations of $PE_{flare,y}$ in PDD. But in MR used Flare efficiency 99,9%. Please provide justification of this value or correct.	CAR4	OK
Applicable to JI SSC projects only				
96	Is the relevant threshold to be classified as JI SSC project not exceeded during the monitoring period on an annual average basis? If the threshold is exceeded, is the maximum emission reduction level estimated in the PDD for the JI SSC project or the bundle for the monitoring period determined?	N/A	N/A	N/A
Applicable to bundled JI SSC projects only				
97 (a)	Has the composition of the bundle not changed from that is stated in F-JI-SSCBUNDLE?	N/A	N/A	N/A
97 (b)	If the determination was conducted on the basis of an overall monitoring plan, have the project participants submitted a common monitoring report?	N/A	N/A	N/A
98	If the monitoring is based on a monitoring plan that provides for overlapping monitoring periods, are the monitoring periods per component of the project clearly specified in the monitoring report? Do the monitoring periods not overlap with those for which verifications were already deemed final in the past?	N/A	N/A	N/A
Revision of monitoring plan				
Applicable only if monitoring plan is revised by project participant				
99 (a)	Did the project participants provide an appropriate justification for the proposed revision?	N/A	N/A	N/A

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
99 (b)	Does the proposed revision improve the accuracy and/or applicability of information collected compared to the original monitoring plan without changing conformity with the relevant rules and regulations for the establishment of monitoring plans?	N/A	N/A	N/A
Data management				
101 (a)	Is the implementation of data collection procedures in accordance with the monitoring plan, including the quality control and quality assurance procedures?	N/A	N/A	N/A
101 (b)	Is the function of the monitoring equipment, including its calibration status, is in order?	N/A	N/A	N/A
101 (c)	Are the evidence and records used for the monitoring maintained in a traceable manner?	N/A	N/A	N/A
101 (d)	Is the data collection and management system for the project in accordance with the monitoring plan?	N/A	N/A	N/A
Verification regarding programs of activities (additional elements for assessment)				
102	Is any JPA that has not been added to the JI PoA not verified?	N/A	N/A	N/A
103	Is the verification based on the monitoring reports of all JPAs to be verified?	N/A	N/A	N/A
103	Does the verification ensure the accuracy and conservativeness of the emission reductions or enhancements of removals generated by each JPA?	N/A	N/A	N/A
104	Does the monitoring period not overlap with previous monitoring periods?	N/A	N/A	N/A
105	If the AIE learns of an erroneously included JPA, has the AIE informed the JISC of its findings in writing?	N/A	N/A	N/A

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
Applicable to sample-based approach only				
106	Does the sampling plan prepared by the AIE: (a) Describe its sample selection, taking into account that: (i) For each verification that uses a sample-based approach, the sample selection shall be sufficiently representative of the JPAs in the JI PoA such extrapolation to all JPAs identified for that verification is reasonable, taking into account differences among the characteristics of JPAs, such as: − The types of JPAs; − The complexity of the applicable technologies and/or measures used; − The geographical location of each JPA; − The amounts of expected emission reductions of the JPAs being verified; − The number of JPAs for which emission reductions are being verified; − The length of monitoring periods of the JPAs being verified; and − The samples selected for prior verifications, if any?	N/A	N/A	N/A
107	Is the sampling plan ready for publication through the secretariat along with the verification report and supporting documentation?	N/A	N/A	N/A
108	Has the AIE made site inspections of at least the square root of the number of total JPAs, rounded to the upper whole number? If the AIE makes no site inspections or fewer site inspections than the square root of the number of total JPAs, rounded to the upper whole	N/A	N/A	N/A

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
	number, then does the AIE provide a reasonable explanation and justification?			
109	Is the sampling plan available for submission to the secretariat for the JISC.s ex ante assessment? (Optional)	N/A	N/A	N/A
110	If the AIE learns of a fraudulently included JPA, a fraudulently monitored JPA or an inflated number of emission reductions claimed in a JI PoA, has the AIE informed the JISC of the fraud in writing?	N/A	N/A	N/A

Table 2 Resolution of Corrective Action and Clarification Requests

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 1	Summary of project participant response	Verification team conclusion
CL1: Amounts of emission reductions provided in PDD and MR are different. Pleas clarify.	Item 92	This difference could be explained by two reasons. First, LFG-to-energy option is not realized yet. Second, not all extraction wells of collection system show the performance according design parameters. It is probable that the biodegradable waste in the area of influence of these extraction wells is oxidized due to imperfect landfill operation, landfill fires, etc. Unfortunately it was impossible to consider all impacts during PDD development. For this reason, two options of the project development were provided in PDD: LFG Flaring option and LFG-to-energy option (*see MR P.3,Par. 4*)	Monitoring Report and calculation file were checked and founded appropriate. Issue was closed.

CL2: There is no information about monitoring $LFG_{total,y}$ in Monitoring Report. Please clarify in MR.	Item 94	Currently, the total LFG stream is go to the Flare, therefore the total amount of LFG captured ($LFG_{total,h}$) is equal to the amount of LFG flared ($LFG_{flare,h}$). In monitoring scheme, the only one flow meter, type DRG.M-1600, temperature sensor PVU-0197 and pressure sensor MIDA-DI-13P-09-01Ex are mounted on the Flare pipeline. This is a temporary option and a separate LFG total amount ($LFG_{total,h}$) flow meter will be installed in conjunction with the CHP individual flow meter. (*see MR P.8,Par.3*)	Monitoring Report, calculation file and monitoring system were checked and founded appropriate. Issue was closed
CL3: In MR and supporting documents no any mentions about $TM_{RG,h}$ monitoring. In accordance with "Tool to determine project emissions from flaring gases containing Methane" this parameter monitored. Please clarify.	Item 95 (a)	$TM_{RG,h}$ is a mass flow rate of methane in the residual gas in dry basis at normal conditions in hour *h*. In MR the concentration of LFG is measured for the sample from which moisture is previously removed due to individual gas cooler (in dry basis) (*see Operating instruction of gas analyzer NGA5-CH_4-O_2, P.10*). The data from flow meter and sensors are transmitted to the BVR.M-1 control system. The flow data is automatically corrected to dry basis due to temperature and pressure data (*see Operating instruction of BVR.M-1 control system P.2,Par.1.1.2*). Therefore all data are measured or corrected to dry basis and: $TM_{RG,h}=FV_{RG,h}*fv_{CH4,RG,h}*p_{CH4,n}=LFG_{flare,h}*W_{CH4,h}*D_{CH4}$ (*see MR P.22,Eq.4*) The description monitoring parameters measured is clarified in MR (*see MR P.8, Par.4*)	Monitoring Report, calculation file and monitoring system were checked and founded appropriate. Issue was closed
CAR1: Letter of Approval from sponsor Party not provided. Please provide Letter of Approval issued by sponsor Party and include relevant information to MR.	Item 90	The letter of approval from Ministry of Economy, Trade and Industry of Japan provided. The relevant information from the letter of approval added to the MR. *(see MR P.2,Par.1*)	Ministry of Economy, Trade and Industry of Japan provided LoA #1 dated 08/08/2011. Letter of Approval was checked and found unconditional. CAR is closed.

CAR2: Provided calculations doesn't take into account emissions CO2 from methane combustion. This emission must be including to project emissions.	Item 95 (d)	Biodegradable carbon (biomass), which is present in the organic fraction of the waste, is part of the carbon biocycle. Inside the landfill body under anaerobic condition the biodegradable carbon is converted into LFG. LFG is approximately half consisting of methane. The combustion of methane from LFG is releases carbon that was recently sequestered by the organic fraction of the waste. Therefore, the carbon dioxide emissions from the combustion of methane are considered CO_2-neutral and not included in the calculation of project emissions. (*see MR P.23,Par.7*)	Monitoring Report was checked and founded appropriate. Issue was closed
CAR3: Please provide calculations and formulas of emission reductions in MR in line with calculations provided in section D of final version PDD.	Item 95 (d)	Calculations were corrected. See section D of MR version 02.	Monitoring Report was checked and founded appropriate. Issue was closed
CAR4: Flare efficiency 90% used in calculations of $PE_{flare,y}$ in PDD. But in MR used Flare efficiency 99,9%. Please provide justification of this value or correct.	Item 95 (d)	The flare efficiency under manufacturer's specification is above 99% when the combustion temperature of the flare (T_{Flare}) is from 1000 to 1200 ^{0}C. Additionally the flare field testing protocol confirm that the flare efficiency is higher than 99.8%. This protocol was added to MR in Annex 3. Therefore the conservative flare efficiency (99,0%) was used instead of efficiency (90,0%) from the Tool (*see MR P.11,Par.2*).	Monitoring Report and supporting document (Annex 3 of Monitoring Report, ver. 02) were checked and founded appropriate. Issue was closed